

Todd Ringler

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Education

- Doctor of Philosophy in Atmospheric Science,
Cornell University, May 1996.
Dissertation title: *Effects of Mechanical and Thermal Forcing by Orography on the Climate*.
- Master of Science in Aerospace Engineering,
Cornell University, May 1992.
- Bachelor of Science in Aerospace Engineering, *Summa Cum Laude*
West Virginia University, May 1990.

Research Interests

- using coupled climate models to characterize regional climate change impacts
- modeling and understanding the global coupled climate system
- developing numerical methods for improving climate system simulations
- understanding the intersection of science and policy

Professional Experience

- 2006- : Technical Staff Member, Theoretical Division, Fluid Dynamics Group,
Los Alamos National Laboratory, Los Alamos, New Mexico,
Research: ocean modeling, regional climate change prediction, numerical methods.
- 1996-2005: Research Scientist III, Department of Atmospheric Science,
Colorado State University, Fort Collins, Colorado,
Research: climate dynamics, atmosphere-land-ocean interactions, numerical methods.
- 1992-1992: NASA Global Climate Change Fellow, Atmospheric Sciences Program,
Cornell University, Ithaca, NY
Research: Impact of mountain ranges on climate
- 1990-1992: Graduate Research Assistant, Aerospace Engineering,
West Virginia University, Morgantown, West Virginia
- 1989-1990: NSF sponsored Undergraduate Researcher, West Virginia University

Positions

- Editor, Monthly Weather Review
- External Advisory Committee Member, Cornell University, Dept. of Earth and Atmospheric Science
- Member of New Mexico's NSF EPSCoR Management Team
- Associate Editor, Monthly Weather Review, 2006-2007

Policy Experience

- 2005: Bighorn Center for Public Policy Fellow, Resource Sustainability Program, Developed policy and legislation related to sustainability and the environment.
- 2003- : Collaborating with TNC Climate Change Initiative, How can we use climate change simulations to inform TNC decision-making process?
- 2005: Colorado Institute for Leadership Training, What is the interplay between science and policy?

Teaching Experience

- 2004-2005: Developed and taught *The Science of Climate Change*, a Freshman Seminar Course at Colorado State University
- 1996-2002: Instructor for Colorado State University Outdoor Adventure Program. Taught courses ranging from Ice Climbing, Mountaineering, to Advanced Rock Climbing.
- 1992-1996: Senior Instructor for Cornell Outdoor Education Program. Taught courses ranging from Natural History to Outdoor Leadership.

Selected Refereed Publications

- Zupanski, M, S.J. Fletcher, I.M. Navon, B. Uzunoglu, R. Heikes, D. Randall, T.D. Ringler, and D. Daescu, 2006, Initiation of ensemble data assimilation, *Tellus*, 58, 159-170.
- Lipscomb, W.H. and T. D. Ringler, 2003: An Incremental Remapping Transport Scheme on a Spherical Geodesic Grid, *Monthly Weather Review*, 133, 2335-2350.
- Bonaventura, L. and T. D. Ringler, 2003: Analysis of Discrete Shallow-Water Models on Geodesic Delaunay Grids with C-Type Staggering. *Monthly Weather Review*, 133, 2351-2373.
- Randall, D.A., T.D. Ringler, R. Heikes, P. Jones, and J. Baumgardner, 2002: Climate Modeling with Spherical Geodesic Grids, *Computing in Science and Engineering*, 4, 32-41.
- Ringler, T.D., and D.A. Randall, 2002: A potential enstrophy and energy conserving numerical scheme for solution of the shallow-water equations on a geodesic grid, *Monthly Weather Review*, 130, 1397-1410.
- Ringler, T.D., and D.A. Randall, 2002: The ZM-grid: An alternative to the Z-grid, *Monthly Weather Review*, 130, 1411-1422.
- Ringler, T.D., R. Heikes, and D.A. Randall, 2000: Modeling the atmospheric general circulation using a spherical geodesic grid: A new class of dynamical cores, *Monthly Weather Review*, 128, 2471-2489.
- Ringler, T.D., and K.H. Cook, 1999: Understanding the seasonality of orographically-forced stationary waves: Interaction between mechanical and thermal forcing. *Journal of Atmospheric Sciences*, 56, 1154-1171.
- Ringler, T.D., and K.H. Cook, 1997: Importance of nonlinearity in orographically-forced stationary waves. *Journal of Atmospheric Sciences*, 54, 2612-2629.
- Lenters, J.D., K.H. Cook, and T.D. Ringler, 1995: Comments on On the influence of the Andes on the general circulation of the Southern Hemisphere. *Journal of Climate*, 8, 2113-2115.
- Ringler, T.D., and K.H. Cook, 1995: Orographically-induced stationary waves: Dependence on latitude. *Journal of Atmospheric Sciences*, 52, 2548-2560.

Book Chapters

- Randall, D.A., T.D. Ringler, and R. Heikes, 2000: Global atmospheric modeling using a geodesic grid and an isentropic vertical coordinate. In: D.A. Randall (Ed.), *General Circulation Model Development*, International Geophysics Series, vol. 90, Academic Press, New York, 509-536.
- Ringler, T.D., R. Heikes, and D.A. Randall, 1998: Solving the primitive equations on a spherical geodesic grid: A technical report to a new class of dynamical cores. *Atmospheric Science Paper No. 665*. Colorado State University. 62 pp.

Selected Presentations

- Ringler, T.D., 2006: Complex Systems: Energy, Climate, Environment, and Risk Assessment, LANL Grand Challenges Workshop, Los Alamos, November 1, 2006.
- Ringler, T.D., 2006: Grids for Climate System Modeling, TSC Workshop on Meshing Challenges for LANL Simulations, Los Alamos, New Mexico, October 30, 2006.
- Ringler, T.D., 2006: Risk Analysis and Climate Change, Presented to the PARADIGM Decisions Applications Group, Los Alamos, New Mexico, October 10, 2006.
- Ringler, T.D., 2006: New numerical methods in ocean general circulation modeling: Voronoi tessellations and floating vertical coordinates, Monterey, California, June 26, 2006.
- Ringler, T.D., 2005: Challenges in Coupled Climate Model Development, Presented to the Coupled Ocean Sea-Ice Modeling Group, Los Alamos, New Mexico, May 16, 2005.
- Ringler, T.D., 2005: Challenges in Coupled Climate Model Development, Presented to the Coupled Ocean Sea-Ice Modeling Group, Los Alamos, New Mexico, May 16, 2005.
- Ringler, T.D., D. Randall, and J. Baumgardner, 2003: A Global Ocean Model based on Icosahedral-Hexagonal Grids with a Hybrid Vertical Coordinate, Presented at the American Geophysical Union Conference, San Francisco, December 11, 2003.
- Ringler, T.D., 2003: Comparing Truncation Error to PDE Solution Error on Spherical Voronoi Tessellations. Presented at the Workshop on Current Development of Shallow-Water Models on the Sphere, March 10, 2003, Munich, Germany.
- Ringler, T.D., 2003: An Integrated Approach to Coupled Climate Modeling based on Geodesic Grids and Quasi-Lagrangian Vertical Coordinates. Invited Presentation at the Max Planck Institute for Meteorology, February 27, 2003, Hamburg, Germany.
- Ringler, T.D., 2002: Geodesic grids for ocean modeling. Presented at the MIT Ocean Modeling Meeting, August 21-23, 2002, Cambridge, Massachusetts. Ringler, T.D., M. Branson, and D.A. Randall, 2002: Impact of an energy conserving scheme in the CSU AGCM. Presented at the 2002 PDEs on the Sphere Workshop, August 12-15, 2002, Toronto, Canada.
- Ringler, T.D. and D.A. Randall, 2002: Development of an energy conserving numerical scheme suitable for geodesic grids. Presented at the CCSR Workshop for the Next Generation Climate Models, March 4-8, 2002, Awaji-Yumebutai, Japan.
- Ringler, T.D., D.A. Randall, J. Baumgardner, and B. Semtner, 2002: Our strategy for designing a geodesic grid ocean GCM with a hybrid vertical coordinate. Presented at the Layered Ocean Modeling Workshop, February 6-8, 2002, Miami, Florida.
- Ringler, T.D. and D.A. Randall, 2002: An integrated approach to coupled climate modeling based on geodesic grids and quasi-Lagrangian vertical coordinates. Presented at the 13th Symposium on Global Change and Climate Variations, January 14, 2002, Orlando Florida.

- Ringler, T.D. and D.A. Randall, 2002: Interactions of monsoons and anticyclones. Presented at the 13th Symposium on Global Change and Climate Variations, January 14, 2002, Orlando Florida.
- Ringler, T.D. and D.A. Randall, 2001: Geodesic Grids and Data Analysis. Presented at the Earth Observing System Working Group Meeting, November 1, 2001, San Antonio, Texas
- Ringler, T.D. and D.A. Randall, 2001: Energy, geostrophic adjustment, and a momentum analog to the Z-grid. Presented at 7th Workshop on the Solution of Partial Differential Equations on the Sphere, May 16-18, 2001, Montreal, Canada.
- Ringler, T.D., R. Heikes, and D.A. Randall, 1999: Modeling the Atmospheric General Circulation Using a Spherical Geodesic Grid. Presented at 8th Workshop on the Solution of Partial Differential Equations on the Sphere, November 30 - December 3, 1999, San Francisco, California.
- Dazlich, D.A., T.D. Ringler, and D.A. Randall, 1998: High resolution surface flux calculations with the Colorado State University general circulation model. Presented at the 9th Conference on Interaction of the Sea and Atmosphere, January 11-16, 1998, Phoenix, Arizona.
- Ringler, T.D. and K.H. Cook, 1997: Nonlinearly-forced stationary waves by orography: Interaction between mechanical and thermal forcing. Presented at the 11th Conference on Atmospheric and Oceanic Fluid Dynamics, June 23-27, 1997, Tacoma, Washington.
- Ringler, T.D. and K.H. Cook, 1995: Nonlinear forcing of stationary waves. Presented at the 10th Conference on Atmospheric and Oceanic Waves and Stability, June 5-9, 1995, Big Sky, Montana.